0000158486

OPEN MEETING ITEM

ORIGINAL

MEMORANDUM

RECEIVED

2014 DEC -5 P 4: 08

AZ CORP COMMISSION
DOCKET CONTROL

TO: Docket Control Center

FROM: Steven M. Olea
Director
Utilities Division

DATE: December 5, 2014

RE: STAFF REPORT FOR THE APPLICATION OF SOUTHWEST GAS CORPORATION FOR A DETERMINATION OF PRUDENCE AND PRE-APPROVAL OF RATEMAKING TREATMENT RELATING TO CONSTRUCTION OF LIQUEFIED NATURAL GAS STORAGE FACILITY IN SOUTHERN ARIZONA (DOCKET NO. G-01551A-14-0024)

Attached is the Staff Report for Southwest Gas Corporation's application for a determination of prudence and pre-approval of ratemaking treatment relating to construction of liquefied natural gas storage facility in southern Arizona. Staff recommends pre-approval of construction of the liquid natural gas storage facility without liquefaction equipment, subject to a number of conditions.

SMO:RGG:sms\CHH

Originator: Robert Gray

Arizona Corporation Commission
DOCKETED
DEC 05 2014
DOCKETED BY

STAFF REPORT
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

SOUTHWEST GAS CORPORATION

DOCKET NO. G-01551A-14-0024

APPLICATION FOR A DETERMINATION OF PRUDENCE AND PRE-APPROVAL OF RATEMAKING TREATMENT RELATING TO CONSTRUCTION OF LIQUEFIED NATURAL GAS STORAGE FACILITY IN SOUTHERN ARIZONA

DECEMBER 5, 2014

STAFF ACKNOWLEDGMENT

The Staff Report for Southwest Gas Corporation, Docket No. G-01551A-14-0024 was the responsibility of the Staff members listed below. Robert Gray was responsible for the overall review of the Company's application, background and need information, discussion of the Commission's policy statement, and Staff's overall recommendations. Briton Baxter was responsible for the cost analysis, discussion of similar facilities and cost recovery issues. Ryan Weight was responsible for reviewing the safety issues related to the proposed facility.

Robert G. Gray
Executive Consultant III

Briton Baxter
Public Utilities Analyst V

Ryan Weight
Pipeline Safety Senior Inspector

TABLE OF CONTENTS

SCHEDULES

Introduction

On January 27, 2014, Southwest Gas Corporation ("Southwest" or "Company") filed for Commission pre-approval to construct a liquid natural gas ("LNG") storage facility, at a cost of up to $55,000,000 in the vicinity of Tucson, Arizona, pursuant to the Arizona Corporation Commission's ("Commission") December 18, 2003 Policy Statement Regarding New Natural Gas and Pipeline Costs ("Policy Statement"). Southwest's filing also requests that the Company be authorized to establish a regulatory asset to defer the on-going revenue requirement associated with the proposed LNG facility. Southwest further requests approval to recover certain gas costs related to the LNG facility through the Company's existing Purchased Gas Adjustor ("PGA") mechanism.

Background

Arizona currently has no natural gas storage facilities within the state. Linepack[1] on interstate pipelines provides a form of natural gas storage, but has limitations. Hence there has been an interest for many years in developing natural gas storage in Arizona. Natural gas storage can provide a variety of benefits including price hedging and stability opportunities, enhanced service reliability, and more efficient management of pipeline assets including avoidance of pipeline penalties. Arizona's interest in natural gas storage has grown in the last 10-15 years due to a number of developments, including:

- Much greater dependence on natural gas for electric generation in Arizona, with electric generators requiring varying amounts of flexibility in how they take natural gas supplies.
- Loss of service flexibility on the El Paso Natural Gas ("El Paso") pipeline system when Arizona shippers on the pipeline were forcibly converted from their existing full requirements contracts to contract demand contracts in 2003.
- Subsequent to the loss of full requirements contracts, service flexibility on the El Paso system via new enhanced services offered by the pipeline gradually became significantly more expensive.
- Natural gas service outages and, in particular, the February 2011 loss of service experienced by over 19,000 Southwest Gas customers in Sierra Vista and Tucson.

There are existing natural gas storage facilities to the east of Arizona in Texas and New Mexico and to the west of Arizona in California. These facilities have some potential to help meet Arizona's natural gas storage needs, but their distance from Arizona markets reduces their usefulness in comparison to a potential natural gas storage facility in Arizona that would provide ready market access. To date, the focus of efforts to develop natural gas storage in Arizona has been on salt cavern natural gas storage. Arizona has a number of locations where salt formations could potentially host hollowed-out salt caverns which could provide significant deliverability on short notice. The Red Lake area north of Kingman, Arizona, including some property formerly owned by Southwest Gas, was an area that received some consideration for natural gas storage development in the early 2000s, but not in recent years. The Copper Eagle site in west Phoenix, owned by Arizona

[1] The amount of natural gas in the pipeline system, the level of which varies to some extent due to gas moving onto and being taken off of the system

Public Service Company ("APS") and then El Paso was considered a potentially prime location for a natural gas storage facility, but public and legislative opposition derailed El Paso's plans to develop a natural gas storage facility in the area. In recent years, the development of a salt cavern storage facility has focused on the Picacho area of central Arizona, with El Paso and Multifuels LP both pursuing projects in the area. Development of a salt cavern storage facility has been hampered by uncertainties regarding brine disposal as well as difficulties in demonstrating the cost-effectiveness of such a facility, recognizing that the value of enhanced natural gas service reliability is difficult to quantify. At this time, Staff is not aware of any salt cavern natural gas storage project that is being actively pursued.

Applicability of the Commission's Policy Statement on Natural Gas Infrastructure

Southwest cites the Commission's December 18, 2003 Policy Statement in requesting pre-approval for construction of the LNG facility. The Commission's policy statement was issued in an effort to spur natural gas infrastructure projects that had long term benefits to the state of Arizona even if they did not provide the short term lowest cost alternative. To date, the Commission has received pre-approval applications under the Policy Statement in connection with the proposed construction of two interstate pipeline projects, Kinder Morgan's Silver Canyon pipeline and Transwestern's Phoenix Expansion project, as well as the acquisition of pipeline capacity on El Paso's Line 1903 by Southwest Gas. Both the Silver Canyon (eventually abandoned) and Phoenix Expansion (built) projects involved bringing a new natural gas pipeline into central Arizona, introducing some level of pipeline competition to the area, as well as providing greater access to natural gas supplies in the San Juan supply basin.

The Commission pre-approved pipeline capacity acquisitions on the Silver Canyon and Phoenix Expansion projects for APS, Southwest Gas, and UNS Gas, Inc. In these pre-approvals, the Commission recognized that long term benefits to Arizona outweighed the possible higher cost of pipeline capacity in the short term. In the case of Line 1903, the Commission rejected Southwest's application for pre-approval of the acquisition of pipeline capacity on the basis that such an acquisition was already Southwest's lowest cost alternative and, thus, should be undertaken in the course of normal business and not given pre-approval treatment.

Staff believes that Southwest's application for approval of the LNG facility is consistent with the purpose of the Policy Statement. The LNG proposal is not the lowest cost path option in the short term but does offer some long term benefit to the state of Arizona in the form of local area natural gas storage that could help avoid possible future service interruptions.

Details of Proposed Facility

The proposed facility would require approximately 30 acres of land and would entail a storage tank approximately 60 feet in height and 108 feet in diameter. The storage capacity would be approximately 233,000 Dth (2,815,000 gallons) with a withdrawal capacity of roughly 65,000 Dth/day. A minimum of 11,000 Dth would be required to remain in the tank at all times. The facility would be filled either by delivering LNG via tanker truck or liquefying onsite natural gas from the interstate pipeline system. Southwest would need to construct up to 7 miles of mainline

pipe facilities to interconnect with Southwest's pipeline system in the area. Southwest estimates construction to take 24 to 30 months from the time the Commission approves the project.

The facility is anticipated to be somewhere in the area of Southwest's Houghton Road and Valencia Road taps on the El Paso pipeline system. These taps serve approximately 95,500 customers in the southeastern part of Tucson. During low demand periods, the facility could serve all customers on the Houghton Road and Valencia Road taps for a number of days, while coming close to being able to serve all customers these taps at peak demand times for a shorter period of time.

Need for Proposed Facility

Southwest's application and subsequent information provided to Staff indicate that the primary benefit of the proposed facility would be to provide a local source of natural gas to help avoid service outages during extreme events such as cold weather. According to Southwest, outages in February 2011 where service to more than 19,000 customers in southeastern Arizona was lost would have been avoided if Southwest had the LNG facility available at that time. However, if there was a larger outage event, such as the loss of multiple pipelines feeding into Arizona, Southwest's LNG facility is too small to have any impact on such a large scale outage.

Events such as the February 2011 outage have historically been rare and it is difficult to place a monetary value on the ability to avoid such events in the future. Staff believes that this is a fundamental policy call before the Commission in this proceeding. In essence, is the additional increment of service reliability afforded by the proposed LNG facility worth the additional increment of cost to Southwest ratepayers' monthly bills (discussed below)?

Southwest has indicated that the facility would be beneficial to its customers elsewhere in the state as it would allow Southwest, in a situation where natural gas supplies were tight, to use natural gas from the LNG facility to serve the Tucson area and divert supplies to buttress service to other parts of Southwest's system in Arizona.

Cost Analysis of Facility

The Company has presented two construction scenarios. The first is a facility referred to by the Company as an LNG storage facility without liquefaction, where natural gas would be trucked to the facility. This facility would cost an estimated $46 million. The second facility, referred to as an LNG storage facility with liquefaction, would connect directly to the El Paso supply line and contain equipment necessary to liquefy natural gas on site. This facility would cost an estimated $70 million. The costs associated with each of these facilities differ due to several considerations including site location, construction costs, and facility operating costs. Southwest has stated that initially the facility without liquefaction equipment would be built and that the liquefaction equipment could be added at a future date. Southwest has stated that the useful life of either option is 21 years.

As outlined below, Staff reviewed all of the estimated costs of the facility under both options for reasonableness. During this review, Staff asked a number of questions for clarification of the

facility costs included in the estimates, for all associated operational costs and for the revenue requirement for 10 years under both options, as well as questions related to how this facility will benefit Southwest customers.

Staff recommends that the Commission authorize pre-approval of a storage facility without liquefaction equipment using the Company's proposed accounting deferral proposal. However, Staff's recommendation would be conditioned upon a number of stipulations including the following: first, that there be cessation dates associated with the accounting deferral; second, that the total amount subject to deferral be capped; and third, that any potential cost savings also be deferred.

Location

Southwest originally evaluated six potential sites, later adding several additional sites, where they considered: (1) areas that experienced outages during the February 2011 supply disruption event, (2) portions of its distribution system capable of receiving significant volumes of gas, and (3) locations where the proposed LNG storage facility could connect to Southwest's distribution system with minimal additional pipeline facilities. The Company also considered the availability of utilities (water, power, etc.), land use zones, sensitive nearby facilities such as schools and hospitals, landowner and parcel information, rights-of-way and access roads, and available acreage. The six sites evaluated would be viable under both storage options.

Southwest states that it cannot provide a definitive opinion as to what the final land acquisition cost will be because it says that sellers are currently asking for three to three and a quarter times more than what the sites were recently appraised. The Company speculates that because these sites are all zoned commercial/industrial the land owners may be factoring in an anticipated value of revenue they perceive can be realized from potential developments. The Company also noted that the appraisal reports were generated using information from a time of economic downturn. Southwest believes that the land owners' current asking prices may be formed by a more optimistic assessment of the value of their property that is reflective of an improving economy. As such, the Company intends to continue negotiations with multiple land owners, have its own independent appraisals conducted on these sites to further facilitate these negotiations, and endeavor to pursue the parcel that is estimated to yield the lowest overall project cost.

[redacted]

[redacted]

Construction costs

Actual construction costs of the LNG facility will also be driven by which storage option is chosen. [redacted] The Company stated that a facility built without liquefaction would be built such that the liquefaction equipment could be added at a later date.

Also impacted by the facility option chosen are the allowance for funds used during construction ("AFUDC") and administrative and general overhead costs because these items are based on a percentage of the overall project cost. The Company is proposing inclusion of about 2.2 percent for AFUDC and 5.53 percent in administrative overheads. Such administrative overheads would not be applied to the cost of land, right-of-way and LNG gas expenses. [redacted]

Operating costs

Southwest provided estimates that show how the operational costs under the different facility options will differ. The differences are primarily due to power and labor requirements, as well as price differences in the costs associated with refilling the storage tank with natural gas. As shown on Schedule BAB-4, under the with liquefaction option Southwest estimates that it will cost $905,245 in the first year of operation and $807,728 in the second year. The Company estimates that under the option without liquefaction it will cost $236,936 in the first year of operation and $240,490 in the second year. Under both options, the Company anticipates annual increases of about 1.5 percent in subsequent years.

As shown on line 2 of Schedule BAB-4, power costs associated with operating the facility with liquefaction equipment in the first year are estimated to be $256,556 more than a facility without liquefaction equipment. This includes the power costs only associated with liquefying natural gas to refill the tank as gas is released into the pipeline. Power costs are estimated to be higher in the first year of operation as a result of the increased power requirements necessary to fill the LNG storage tank with liquefaction equipment. As a result, in the second year of operation

power costs for a facility with liquefaction equipment are anticipated to decrease by $107,494, from $296,786 to $189,292.

Per the Company, operating a facility with liquefaction equipment would require six full-time employees four of which would be added positions. As shown on line 4 of Schedule BAB-4, the increased labor requirements are estimated to be $544,855. For a facility without liquefaction equipment, the engineering firm hired to assist the Company in evaluating this facility recommended that two onsite employees be present during any filling and vaporization periods, and estimates that 600 man hours would be necessary for annual maintenance. As a result, the Company would likely need to hire one full-time position to meet the needs of a facility without liquefaction. As shown on line 4 of Schedule BAB-4, the increased labor requirements would cost an estimated $133,102 or $411,753 less than a facility with liquefaction.

Under the LNG storage facility without liquefaction, the Company would require a third party vendor to truck in liquid natural gas to fill the tank while a facility with liquefaction equipment would connect directly to the El Paso pipeline and liquefy the gas directly. As shown on Schedule BAB-5, these two methods of filling the tank would result in different gas costs. In year 1, initial fill costs for a facility without liquefaction are estimated to be $5,267,537 while those for a facility with liquefaction equipment would be $2,188,144, a difference of $3,079,393. There are similar cost differences in year 2 under the boil off[2] and full cycle alternatives[3].

Revenue Requirement

The revenue requirement is impacted by the total cost of the facility and the associated operating costs under each option. As shown on Schedule BAB-5, due primarily to the [redacted] cost of the liquefaction equipment as covered in the construction cost section, the revenue requirement for an LNG facility with liquefaction for the first year is estimated to be $6,475,758 higher than an LNG facility without liquefaction. The fair value rate of return that the Company is applying in determining the anticipated rate of return on the proposed LNG facility was approved in Decision No. 72723 at 7.02 percent, which Southwest Gas is stating equals a pre-tax rate of return of 12.22 percent[4].

Similar Facilities

To assist in evaluating the reasonableness of the Company's cost estimates in this filing, Staff asked the Company to identify any similar LNG facilities in other states that have been constructed recently. The Company directed Staff to a project in New Mexico. The project was proposed by the New Mexico Gas Company in 2012 but was ultimately withdrawn from consideration and never

---

[2] Boil off occurs during a heat transfer process that causes the LNG stored in the tank to vaporize after the LNG reaches a temperature greater than minus 260 degree Fahrenheit. Any boil off would be released into the distribution system.

[3] A full cycle is where all of the available LNG gas is released into the distribution system and the tank is subsequently refilled. The Company stated in response to DR BG1.30 that 11,000 Dth would be held back as heel or cushion gas to maintain the tank.

[4] Staff did not verify the Company's grossed-up calculation that was provided in response to DR BG2.07.

built. Staff compared the cost of the LNG facility without liquefaction to the costs of the proposed New Mexico facility, which the Company stated was for a similar facility[5].

[redacted] the New Mexico facility was estimated to cost $38.1 million, which is $8.2 million less than the Southwest proposed facility without liquefaction. [redacted]

Cost Recovery

After evaluating both options, the Company is proposing a facility without liquefaction equipment. Southwest is requesting an accounting deferral for the estimated cost of the LNG facility without liquefaction plus 20 percent for contingencies for a total cost of up to $55 million. Other options include approving the prudence of the project but not authorizing an accounting deferral and allowing recovery through the normal rate base/rate of return considerations in the Company's next rate case, or establishing a storage surcharge. Staff recommends that the Commission approve an accounting deferral for the Company's estimated cost of $46 million removing the proposed AFUDC, and then providing approximately 10 percent for contingencies on the remaining amount for a total cost not to exceed $50 million. As shown on Schedule BAB-7, for an LNG facility without liquefaction equipment the typical residential monthly bill would increase overall from $40.32 to $40.94, an increase of $0.62, or 1.54 percent[6].

Staff is making no recommendation at this time regarding the ultimate recovery of the deferred costs; however, Staff's initial position is that the cost deferrals not be included in rate base in a future rate review. That will need to be a matter based upon a showing of prudence and other evidence to be given consideration in a future Southwest rate case. Staff further recommends that gas costs associated with the LNG storage facility be recovered through Southwest's existing Purchased Gas Adjustor mechanism. Staff further recommends that Southwest identify specific gas costs related to the LNG facility in the monthly PGA reports it files with the Commission.

Safety Considerations Related to the Proposed Facility

In the matter of Southwest's proposal to construct an LNG storage facility in the Tucson area, the Pipeline Safety Section has reviewed Southwest's proposal to determine if the initial design was conducted in accordance with Title 49, Code of Federal Regulations ("CFR") Part 193. These

[5] The costs included in Confidential Schedule BAB-6 were reported in exhibit KLO-3 of the New Mexico Gas Company, Inc. filing, case number 12-00364-UT. Staff reclassified the New Mexico Gas Company reported expenses into the categories used by Southwest Gas, for comparative purposes.

[6] The typical bill impact uses the annualized costs, to account for seasonal price fluctuations in the price of natural gas. The winter and summer typical bill impacts can be seen on Schedule BAB-7.

regulations govern the design, construction, operation, and maintenance of LNG facilities. The Safety Section has had experience in this issue due to fact that there are two (2) jurisdictional LNG plants in operation subject to federal and state regulations. These LNG facilities are located in Ehrenberg and Topock.

Prior to the construction of any new LNG facility, CFR Part 193 requires a siting study and calculation as part of the initial design phase. This study involves the determination of exclusion distances as a result of thermal energy in the form of heat resulting from an LNG fire and exclusion distances determined as a result of flammable vapors from an LNG spill. The calculated distances are used to design the plant to minimize hazards to public safety and property that could possibly result from an LNG fire or LNG spill.

Based on information provided by Southwest, it appears that the siting requirement for protection from thermal radiation resulting from an LNG fire was initially completed. When conducting the study, there were situations based on local weather conditions that were required to be considered in accordance with Part 193 and NFPA (National Fire Protection Association) 59A, that include the following:

- Local wind speed that would produce the maximum thermal radiation distance. In this model, the calculations used a wind speed of 35 mph. It was assumed that wind speeds higher that 35 mph would occur less than 5 percent of the time based on recorded weather information for the South Tucson area.

- Local temperature and humidity that would also produce the maximum thermal radiation distance. The calculations used a temperature of 120 degrees and a humidity level of 5 percent.

Southwest will still need to conduct a siting study to determine exclusion zones (safe distances) for dispersion of flammable vapors. CFR Part 193 and NFPA 59A requires distances of vapor as determined by the following conditions:

- Average gas concentration in air is 2.5 percent.

- Weather conditions that would produce the maximum downwind distances of vapors from an LNG spill.

- Other conditions such as elevation contour and surface roughness (density of vegetation, surface terrain, etc.) must also be considered in accordance with Part 193 and NFPA 59A.

Staff recommends that Southwest complete the siting requirements for flammable vapor dispersion as a condition of approval for its proposed LNG facility.

Conclusions

Southwest's application involves the construction of an LNG facility and contemplates the optional construction of a liquefaction facility also. Southwest has indicated that the liquefaction facility could be added at a later date without significant cost differences other than materials, etc. may be more expensive due to inflation in the future. Staff likes the idea that natural gas could be added from the nearby interstate pipeline system rather than trucked in from a distant location. However, from the information provided by Southwest, it does not appear that the cost of the liquefaction facilities at this time would provide commensurate benefits to Southwest and its ratepayers. Thus, Staff recommends against pre-approval of the liquefaction option, recognizing that construction of liquefaction may be revisited by the Company at a future date.

Regarding the storage facility itself, Staff believes that there is a growing need in Arizona for natural gas storage to maintain reliable natural gas service to Arizona residents. This need would be greatly exacerbated under the proposed 111(d) rules proposed by the Environmental Protection Agency ("EPA"). Under the EPA rules as currently drafted and absent significant modification, Arizona would have to shut down most if not all of its fleet of coal generating units to try to meet EPA's 2020 interim goal. This would greatly increase Arizona's reliance on natural gas for electric generation and would likely increase interest in the development of a large scale salt cavern natural gas storage facility in the near term future. Southwest has previously been part of efforts to develop salt cavern natural gas storage in Arizona. If salt cavern natural gas storage were developed in Arizona, it would be expected to provide a lower cost storage alternative for a given volume of capacity than Southwest's proposed LNG storage facility would. Thus, a question arises as to whether Southwest should pursue a more certain, more costly LNG storage facility in the short term or wait and be part of a less costly, less certain salt cavern storage facility in the future. There are arguments to be made for both alternatives. If there was some certainty that a salt cavern facility was to be built, Staff believes that would be the preferred course of action, but such certainty is elusive at this time. Thus, it is a judgment call as to whether Southwest should build now or wait on a possible salt cavern facility. At this time, Staff recommends pre-approval of the LNG facility, without liquefaction, given the uncertainty around construction of a salt cavern facility.

Summary of Staff Recommendations

Staff recommends approval of the LNG storage facility without liquefaction under the accounting deferral requested by the Company with the following stipulations:

1. Any authorizations to defer costs shall expire no later than November 1, 2017. Any expense incurred after October 31, 2017 would not be eligible for deferral,

2. Any authorizations to defer costs shall be limited to $50 million,

3. Any potential costs savings, here as yet unquantified by the Company or Staff, shall also be deferred,

4. The deferred costs and deferred benefits shall be evaluated in a future rate proceeding.

5. The Company file, as a compliance item with Docket Control, construction progress reports every 6 months until completion, starting 12 months after the issuance of the Decision in this proceeding until project completion. These reports should include all invoiced project costs incurred as of the date of the report.

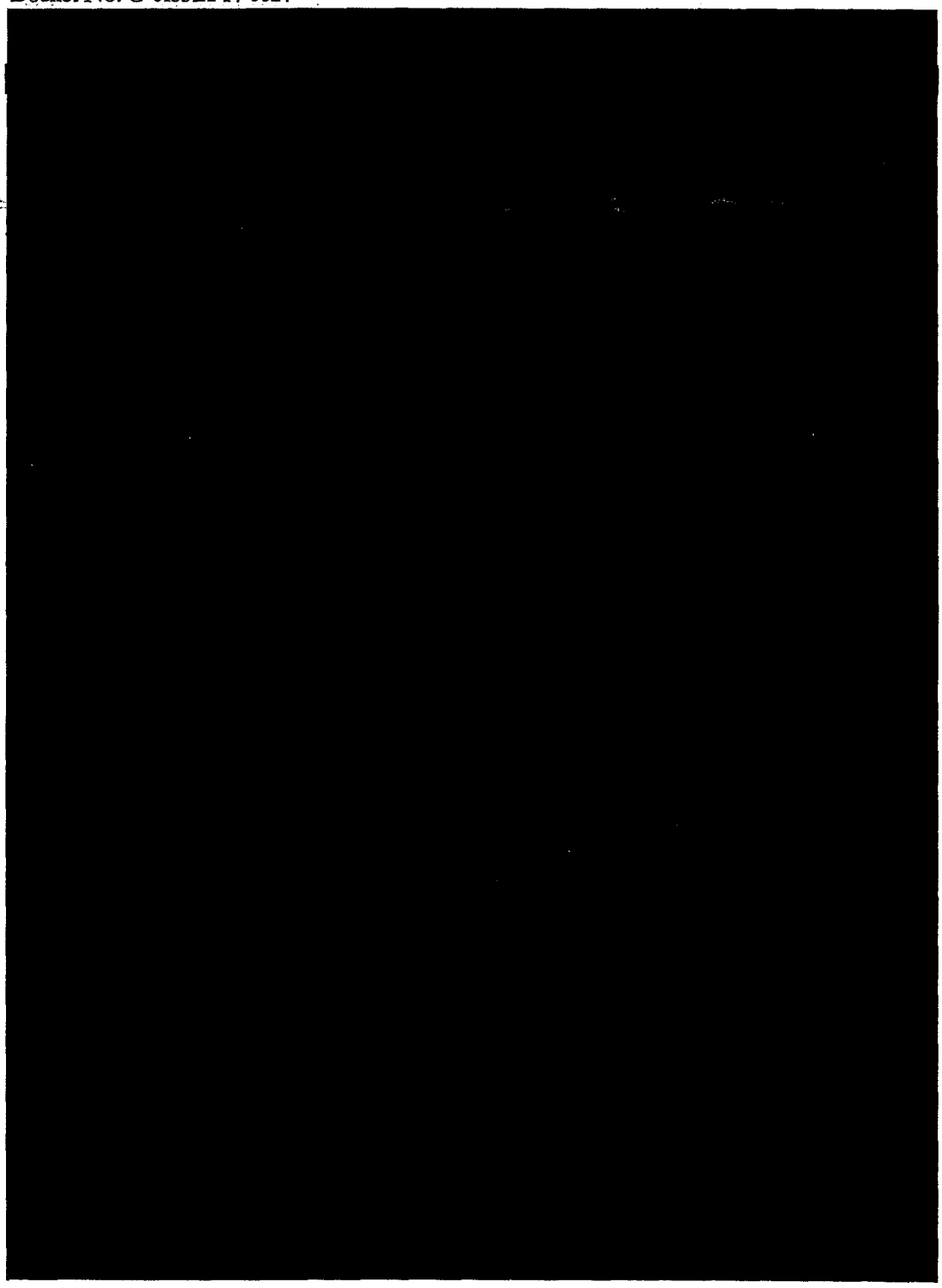
6. The Company complete the siting requirements for flammable vapor dispersion as a condition of approval for their proposed LNG facility.

7. Any gas costs associated with the LNG storage facility be recovered through Southwest's existing Purchased Gas Adjustor mechanism.

8. The Company identify specific gas costs related to the LNG facility in its monthly PGA reports it files with the Commission.

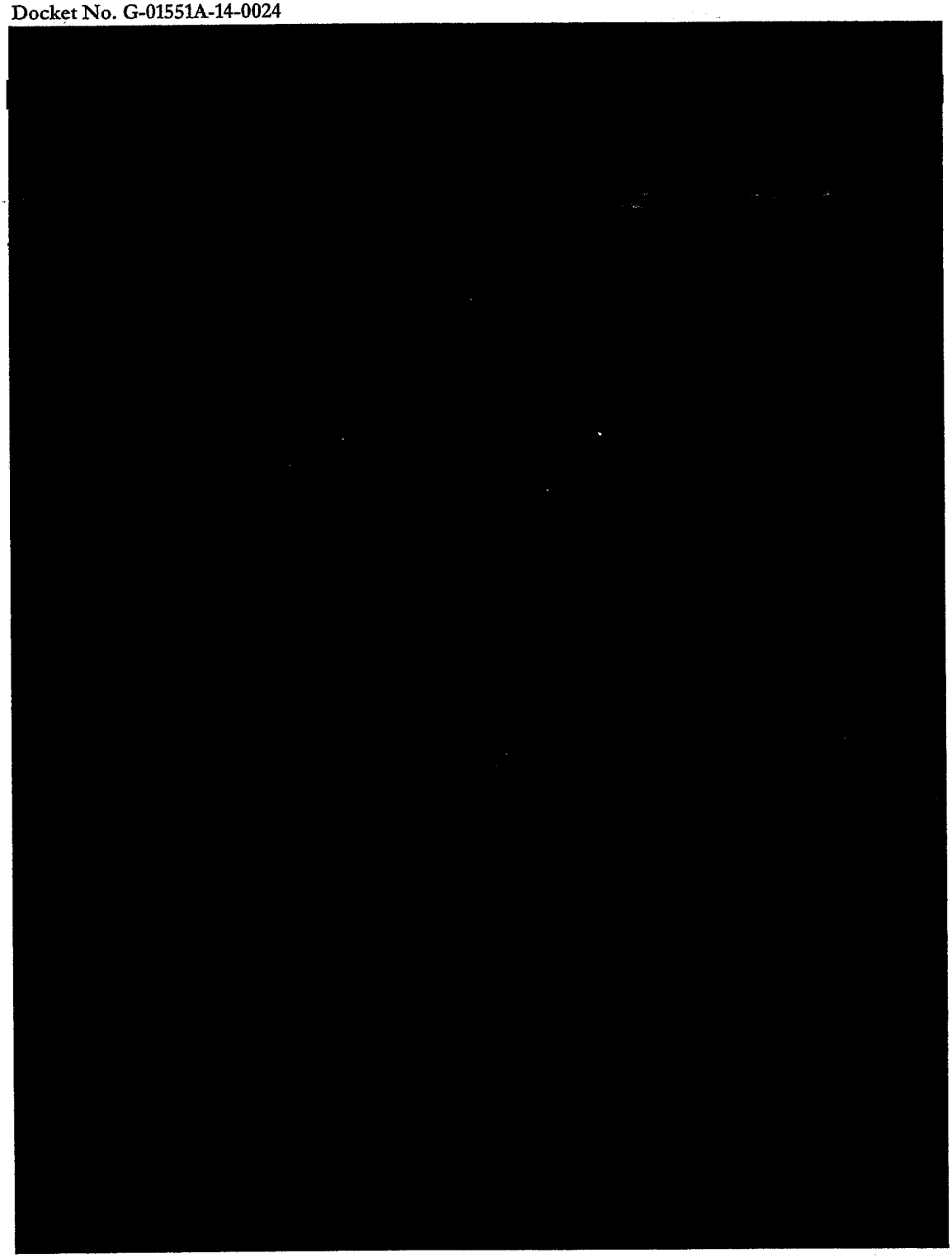
Southwest Gas Company
Docket No. G-01551A-14-0024

Confidential Schedule BAB-1



Southwest Gas Company
Docket No. G-01551A-14-0024

Confidential Schedule BAB-2



Southwest Gas Company
Docket No. G-01551A-14-0024

Schedule BAB-3

ESTIMATED OPERATING AND MAINTENANCE COSTS

Line No.	Description	[A] Without Liquefaction	[B] With Liquefaction	[C] Difference
	Year 1			
1	Maintenance of Mains	$3,604	$3,604	$0
2	Power Costs [1]	40,230	296,786	256,556
3	Other Operation and Maintenance (O&M) Costs [2]	60,000	60,000	0
4	Labor Costs [3]	133,102	544,855	411,753
5	**Total Estimated O&M Costs**	**$236,936**	**$905,245**	**$668,309**
	Year 2			
6	Maintenance of Mains	$3,658	$3,658	$0
7	Power Costs [1]	40,833	189,292	148,459
8	Other Operation and Maintenance (O&M) Costs [2]	60,900	60,900	0
9	Labor Costs [3]	135,099	553,878	418,779
10	**Total Estimated O&M Costs [4]**	**$240,490**	**$807,728**	**$567,238**

[1] Power costs are estimated to be higher in the first year as a result of an increased level of power requirements necessary to fill the proposed LNG storage facility with liquefaction equipment.

[2] $5K per month was assumed for other operation and maintenance costs that may be incurred, such as, additional property insurance, security monitoring, hazard detection, and other utilities such as sewer, water and phone.

[3] Estimated annual labor costs, including loading. Assumes one full-time employee for Option #1 and four full-time employees (three technicians and 1 supervisor) for Option #2.

[4] Second year power costs are estimated to reduce to $186,495 from the first year power cost estimate of $296,786 (see footnote 1 above). Total estimated O&M costs for year 2 include a 1.5% escalation factor.

References:
Column [A]: Company response to Staff DR BG 1.34, attachment 1, column B.
Column [B]: Company response to Staff DR BG 1.34, attachment 1, column C.
Column [C]: Column [B] - Column [A]

Southwest Gas Company
Docket No. G-01551A-14-0024

Schedule BAB-4

ESTIMATED NATURAL GAS COSTS

Line No.	Description	[A] Without Liquefaction	[B] With Liquefaction	[C] Difference
1	*Year 1 - Initial Fill*			
2	Delivered Gas Cost	$3,589,837	$1,409,495	($2,180,342)
3	Gas Cost Related to Boil-Off [1]	1,677,700	778,649	(899,051)
4	Total:	$5,267,537	$2,188,144	($3,079,393)
5	*Year 2 - Boil Off Only*			
6	Delivered Gas Cost	$1,930,397	$697,527	($1,232,870)
7	Gas Cost Related to Boil-Off [1]	1,939,023	758,748	(1,180,276)
8	Total:	$3,869,420	$1,456,275	($2,413,146)
9	*Year 2 - One Full Cycle*			
10	Delivered Gas Cost	$3,460,824	$1,362,177	($2,098,647)
11	Gas Cost Related to Boil-Off [1]	3,476,288	1,481,733	(1,994,555)
12	Total:	$6,937,112	$2,843,910	($4,093,202)

[1] Southwest Gas requests that the gas costs associated with the proposed LNG storage facility be recovered pursuant to the Purchased Gas Cost Adjustment Provision (PGA) of the Southwest Gas Arizona Gas Tariff as indicated on page 14, paragraph 44, of the pre-approval application.

References:

Column [A]: Company response to Staff DR BG 1.36, attachment 1, column B.

Column [B]: Company response to Staff DR BG 1.36, attachment 1, column C.
Column [C]: Column [B] - Column [A]

Southwest Gas Company
Docket No. G-01551A-14-0024

Schedule BAB-5

10-Year Revenue Requirement

No Liquefaction

Line No.	Description	[A] Year 1	[B] Year 2	[C] Year 3	[D] Year 4	[E] Year 5	[F] Year 6	[G] Year 7	[H] Year 8	[I] Year 9	[J] Year 10
1	Net Plant Investment	$50,611,294	$48,220,694	$45,830,093	$43,439,493	$41,048,892	$38,658,291	$36,267,691	$33,877,090	$31,486,490	$29,095,889
2	LNG Inventory [2]	2,419,649	2,419,649	2,419,649	2,419,649	2,419,649	2,419,649	2,419,649	2,419,649	2,419,649	2,419,649
3	Accumulated Deferred Income Taxes	(46,031)	(951,560)	(1,676,885)	(2,240,877)	(2,658,646)	(2,943,447)	(3,164,284)	(3,382,726)	(3,602,635)	(3,820,678)
4	Rate Base	$52,984,912	$49,688,783	$46,572,857	$43,618,265	$40,809,895	$38,134,493	$35,523,056	$32,914,013	$30,303,504	$27,694,860
5	Return on Investment & Income Taxes [3]	$6,472,375	$6,069,736	$5,689,110	$5,328,192	$4,985,135	$4,658,321	$4,339,321	$4,020,613	$3,701,726	$3,383,067
	Operating Expenses										
6	Incremental O&M [4]	$244,283	$247,947	$251,666	$255,441	$259,273	$263,162	$267,109	$271,116	$275,183	$279,310
7	Incremental A&G [4]	108,558	184,960	185,443	185,933	186,430	186,935	187,448	187,968	188,496	189,773
8	Depreciation Expense [5]	2,390,601	2,390,601	2,390,601	2,390,601	2,390,601	2,390,601	2,390,601	2,390,601	2,390,601	2,390,601
9	Property Taxes	1,509,642	1,481,485	1,450,280	1,415,869	1,378,088	1,336,766	1,291,724	1,242,777	1,189,731	1,132,383
10	Total Operating Expenses	$4,253,084	$4,304,993	$4,277,990	$4,247,844	$4,214,392	$4,177,464	$4,136,882	$4,092,462	$4,044,011	$3,992,067
11	Total Revenue Requirement	$10,725,459	$10,374,729	$9,967,100	$9,576,036	$9,199,527	$8,835,785	$8,476,203	$8,113,075	$7,745,737	$7,375,134
12	Ratio of Revenue Requirement to Initial Investment	20.24%	19.58%	18.81%	18.07%	17.36%	16.68%	16.00%	15.31%	14.62%	13.92%

With Liquefaction

13	Net Plant Investment	$79,518,199	$75,686,070	$71,853,942	$68,021,714	$64,189,686	$60,357,557	$56,525,429	$52,693,301	$48,861,173	$45,029,044
14	LNG Inventory [2]	745,547	745,547	745,547	745,547	745,547	745,547	745,547	745,547	745,547	745,547
15	Accumulated Deferred Income Taxes	(75,000)	(1,530,971)	(2,696,651)	(3,602,497)	(4,272,892)	(4,729,200)	(5,083,303)	(5,435,009)	(5,789,341)	(6,140,648)
16	Rate Base	$80,188,746	$74,900,646	$69,902,838	$65,164,764	$60,662,341	$56,373,904	$52,187,673	$48,003,839	$43,817,379	$39,633,943
17	Return on Investment & Income Taxes [3]	$9,795,461	$9,149,493	$8,538,985	$7,960,218	$7,410,212	$6,886,358	$6,374,988	$5,863,912	$5,352,514	$4,841,487
	Operating Expenses										
18	Incremental O&M [4]	$954,161	$815,706	$827,942	$840,361	$852,967	$865,761	$878,747	$891,929	$905,308	$918,887
19	Incremental A&G [4]	247,585	360,139	361,952	363,792	365,659	367,554	369,477	371,428	373,409	376,379
20	Depreciation Expense [5]	3,832,128	3,832,128	3,832,128	3,832,128	3,832,128	3,832,128	3,832,128	3,832,128	3,832,128	3,832,128
21	Property Taxes	2,371,882	2,325,304	2,273,797	2,217,106	2,154,968	2,087,105	2,013,232	1,933,048	1,846,241	1,752,485
22	Total Operating Expenses	$7,405,756	$7,333,277	$7,295,819	$7,253,387	$7,205,722	$7,152,548	$7,093,584	$7,028,533	$6,957,086	$6,879,879
23	Total Revenue Requirement	$17,201,217	$16,482,770	$15,834,804	$15,213,605	$14,615,934	$14,038,906	$13,468,572	$12,892,445	$12,309,600	$11,721,366
24	Ratio of Revenue Requirement to Initial Investment	21.45%	20.55%	19.75%	18.97%	18.23%	17.51%	16.80%	16.08%	15.35%	14.62%

[1] All revenue requirements at end of year.
[2] Estimated 13-month average balance.
[3] Grossed-up Rate of Return equal to 12.22% based on the fair value rate of return of 7.02 percent per Decision No. 72723.
[4] Escalated by 1.5% annually for estimated inflation.
[5] Currently authorized depreciation rate in Arizona (Distribution Plant) and Paiute Pipeline Company (Storage Plant).

References:
Columns [A-J]: Company response to Staff DR BG 2.07, part b for the without liquefaction and part c for the with liquefaction option.

Decision No. _____

DOCKET NO. G-1551A-14-0024

Southwest Gas Company
Docket No. G-01551A-14-0024

Schedule BAB-5

10-Year Revenue Requiement

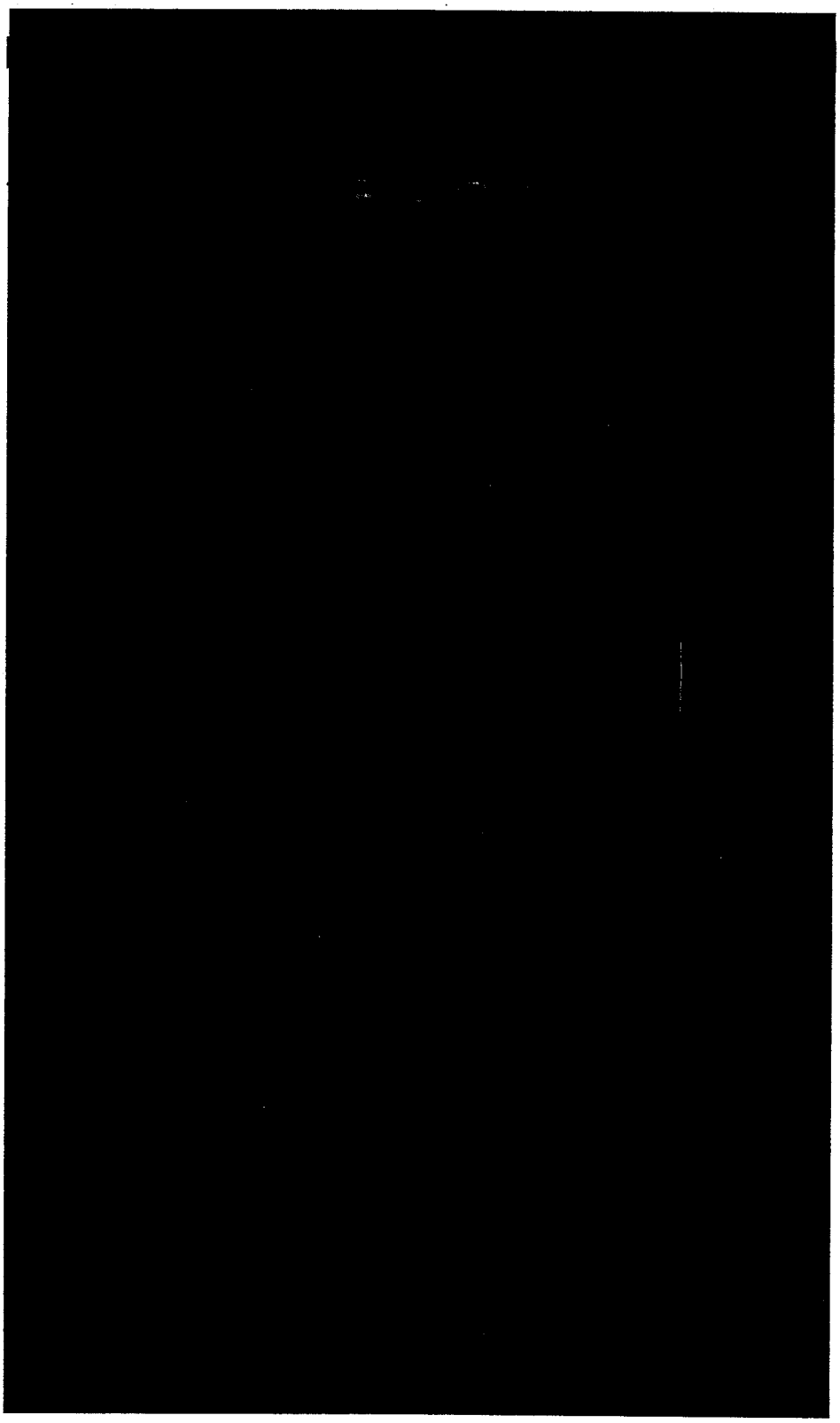
Line No.	Description	[A] Without Liquefaction	[B] With Liquefaction	[C] Difference
		Total Revenue Requirement [1]		
1	Year 1	$10,725,459	$17,201,217	$6,475,758
2	Year 2	10,374,729	16,482,770	6,108,041
3	Year 3	9,967,100	15,834,804	5,867,704
4	Year 4	9,576,036	15,213,605	5,637,569
5	Year 5	9,199,527	14,615,934	5,416,407
6	Year 6	8,835,785	14,038,906	5,203,121
7	Year 7	8,476,203	13,468,572	4,992,369
8	Year 8	8,113,075	12,892,445	4,779,370
9	Year 9	7,745,737	12,309,600	4,563,863
10	Year 10	7,375,134	11,721,366	4,346,232

[1] The Company used a grossed-up Rate of Return of 12.22% based on the fair value rate of return of 7.02 percent per Decision No. 72723, in performing these calculations.

References:
Column [A]: Company response to Staff DR BG 2.07, part b.
Column [B]: Company response to Staff DR BG 2.07, part c.
Column [C]: Column [B] - Column [A]

Southwest Gas Company
Docket No. G-01551A-14-0024

Confidential Schedule BAB-6



Line No.	Description	Therms	Without Liquefaction	Percent Increase	With Liquefaction	Percent Increase
	Base Revenue Requirement					
1	Cost Estimate		$11,445,490		$18,424,841	
2	Total Therms		525,562,794		525,562,794	
3	Cost per Therm		$0.02178		$0.03506	
	Gas Cost Impact					
4	Gas Cost		$1,677,700		$677,781	
5	12-month sales		525,562,794		525,562,794	
6	Per Therm Rate		$0.00319		$0.00129	
	Effective Rates					
7	Basic Service Charge		$10.70			
8	Commodity		$1.18469			
	Average Bill					
9	Summer	11	$23.73			
10	Winter	39	56.90			
11	Annual	25	40.32			
	Residential Bill Impact					
	Base Revenue					
12	Summer	11	$0.240	1.01%	$0.390	1.64%
13	Winter	39	0.850	1.49%	1.370	2.41%
14	Annual	25	0.540	1.34%	0.880	2.18%
	Gas Cost					
15	Summer	11	$0.040	0.17%	$0.010	0.04%
16	Winter	39	0.120	0.21%	0.050	0.09%
17	Annual	25	0.080	0.20%	0.030	0.07%
18	Total Annual Cost	25	$0.620	1.54%	$0.910	2.26%

BEFORE THE ARIZONA CORPORATION COMMISSION

BOB STUMP
Chairman
GARY PIERCE
Commissioner
BRENDA BURNS
Commissioner
BOB BURNS
Commissioner
SUSAN BITTER SMITH
Commissioner

IN THE MATTER OF THE APPLICATION OF SOUTHWEST GAS CORPORATION FOR DETERMINATION OF PRUDENCE AND PRE-APPROVAL OF RATEMAKING TREATMENT RELATING TO CONSTRUCTION OF LIQUIFIED NATURAL GAS STORAGE FACILITY IN SOUTHERN ARIZONA.	DOCKET NO. G-01551A-14-0024 DECISION NO. _____ ORDER

Open Meeting
December 18, 2014
Phoenix, Arizona

BY THE COMMISSION:

FINDINGS OF FACT

1. Southwest Gas Corporation ("Southwest" or "Company") is engaged in providing natural gas service within portions of Arizona, pursuant to authority granted by the Arizona Corporation Commission ("Commission").

2. On January 27, 2014, Southwest filed for Commission pre-approval to construct a liquid natural gas ("LNG") storage facility, at a cost of up to $55,000,000 in the vicinity of Tucson, Arizona, pursuant to the Commission's December 18, 2003 Policy Statement Regarding New Natural Gas and Pipeline Costs ("Policy Statement"). Southwest's filing also requests that the Company be authorized to establish a regulatory asset to defer the on-going revenue requirement associated with the proposed LNG facility. Southwest further requests approval to recover certain gas costs related to the LNG facility through the Company's existing Purchased Gas Adjustor ("PGA") mechanism.

...

Background

3. Arizona currently has no natural gas storage facilities within the state. Linepack[1] on interstate pipelines provides a form of natural gas storage, but has limitations. Hence there has been an interest for many years in developing natural gas storage in Arizona. Natural gas storage can provide a variety of benefits including price hedging and stability opportunities, enhanced service reliability, and more efficient management of pipeline assets including avoidance of pipeline penalties.

4. Arizona's interest in natural gas storage has grown in the last 10-15 years due to a number of developments, including:

- Much greater dependence on natural gas for electric generation in Arizona, with electric generators requiring varying amounts of flexibility in how they take natural gas supplies.
- Loss of service flexibility on the El Paso Natural Gas ("El Paso") pipeline system when Arizona shippers on the pipeline were forcibly converted from their existing full requirements contracts to contract demand contracts in 2003.
- Subsequent to the loss of full requirements contracts, service flexibility on the El Paso system via new enhanced services offered by the pipeline gradually became significantly more expensive.
- Natural gas service outages and, in particular the February 2011 loss of service experienced by over 19,000 Southwest customers in Sierra Vista and Tucson

5. There are existing natural gas storage facilities to the east of Arizona in Texas and New Mexico and to the west of Arizona in California. These facilities have some potential to help meet Arizona's natural gas storage needs, but their distance from Arizona markets reduces their usefulness in comparison to a potential natural gas storage facility in Arizona that would provide ready market access. To date, the focus of efforts to develop natural gas storage in Arizona has been on salt cavern natural gas storage. Arizona has a number of locations where salt formations could potentially host hollowed-out salt caverns which could provide significant deliverability on short notice. The Red

---

[1] "the amount of natural gas in the pipeline system, the level of which varies to some extent due to gas moving onto and being taken off of the system"

Lake area north of Kingman, Arizona, including some property formerly owned by Southwest, was an area that received some consideration for natural gas storage development in the early 2000s, but not in recent years. The Copper Eagle site in west Phoenix, owned by Arizona Public Service Company ("APS") and then El Paso was considered a potentially prime location for a natural gas storage facility, but public and legislative opposition derailed El Paso's plans to develop a natural gas storage facility in the area.

6. In recent years, the development of a salt cavern storage facility has focused on the Picacho area of central Arizona, with El Paso and Multifuels LP both pursuing projects in the area. Development of a salt cavern storage facility has been hampered by uncertainties regarding brine disposal as well as difficulties in demonstrating the cost-effectiveness of such a facility, recognizing that the value of enhanced natural gas service reliability is difficult to quantify. At this time, Staff is not aware of any salt cavern natural gas storage project that is being actively pursued.

Applicability of the Commission's Policy Statement on Natural Gas Infrastructure

7. Southwest cites the Commission's December 18, 2003 Policy Statement in requesting pre-approval for construction of the LNG facility. The Commission's policy statement was issued in an effort to spur natural gas infrastructure projects that had long term benefits to the state of Arizona, even if they did not provide the short term lowest cost alternative. To date, the Commission has received pre-approval applications under the Policy Statement in connection with the proposed construction of two interstate pipeline projects, Kinder Morgan's Silver Canyon pipeline and Transwestern's Phoenix Expansion project, as well as the acquisition of pipeline capacity on El Paso's Line 1903 by Southwest. Both the Silver Canyon (eventually abandoned) and Phoenix Expansion (built) projects involved bringing a new natural gas pipeline into central Arizona, introducing some level of pipeline competition to the area, as well as providing greater access to natural gas supplies in the San Juan supply basin.

8. The Commission pre-approved pipeline capacity acquisitions on the Silver Canyon and Phoenix Expansion projects for APS, Southwest, and UNS Gas, Inc. in these pre-approvals, the Commission recognized that long term benefits to Arizona outweighed the possible higher cost of pipeline capacity in the short term. In the case of Line 1903, the Commission rejected Southwest's

application for pre-approval of the acquisition of pipeline capacity on the basis that such an acquisition was already Southwest's lowest cost alternative and, thus, should be undertaken in the course of normal business and did not merit pre-approval treatment.

9. Staff believes that Southwest's application for approval of the LNG facility is consistent with the purpose of the Policy Statement. The LNG proposal is not the lowest cost path option in the short term but does offer some long term benefit to the state of Arizona in the form of local area natural gas storage that could help avoid possible future service interruptions.

Details of Proposed Facility

10. The proposed facility would require approximately 30 acres of land and would entail a storage tank approximately 60 feet in height and 108 feet in diameter. The storage capacity would be approximately 233,000 Dth (2,815,000 gallons) with a withdrawal capacity of roughly 65,000 Dth/day. A minimum of 11,000 Dth would be required to remain in the tank at all times. The facility would be filled either by delivering LNG via tanker truck or liquefying onsite natural gas from the interstate pipeline system. Southwest would need to construct up to 7 miles of mainline pipe facilities to interconnect with Southwest's pipeline system in the area. Southwest estimates construction to take 24 to 30 months from the time the Commission approves the project.

11. The storage facility is anticipated to be somewhere in the area of Southwest's Houghton Road and Valencia Road taps on the El Paso pipeline system. These taps serve approximately 95,500 customers in the southeastern part of Tucson. During low demand periods, the facility could serve all customers on the Houghton Road and Valencia Road taps for a number of days, while at peak demand times coming close to being able to serve all customers on these taps for a much shorter period of time.

Need for Proposed Facility

12. Southwest's application and subsequent information provided to Staff indicates that the primary benefit of the proposed facility would be to provide a local source of natural gas to help avoid service outages during extreme events such as cold weather. According to Southwest, outages in February 2011, where service to more than 19,000 customers in southeastern Arizona was lost would have been avoided if Southwest had the LNG facility available at that time. However, if there

was a larger outage event, such as the loss of multiple pipelines feeding into Arizona, Southwest's LNG facility is too small to have much of an impact on such a large scale outage.

13. Events such as the February 2011 outage have historically been rare and it is difficult to place a monetary value on the ability to avoid such events in the future. Staff believes that this is a fundamental policy call before the Commission in this proceeding. In essence, is the additional increment of service reliability afforded by the proposed LNG facility worth the additional increment of cost to Southwest ratepayers monthly bills (discussed below)?

14. Southwest has indicated that the facility would be beneficial to its customers elsewhere in the state, as it would allow Southwest, in a situation where natural gas supplies were tight, to use natural gas from the LNG facility to serve the Tucson area and divert supplies to buttress service to other parts of Southwest's system in Arizona.

Cost Analysis of Facility

15. The Company has presented two construction scenarios. The first is a facility referred to by the Company as an LNG storage facility without liquefaction, where natural gas would be trucked to the facility. This facility would cost an estimated $46 million. The second facility, referred to as an LNG storage facility with liquefaction, would connect directly to the El Paso supply line and contain equipment necessary to liquefy natural gas on site. This facility would cost an estimated $70 million. The costs associated with each of these facilities differ due to several considerations including site location, construction costs, and facility operating costs. Southwest has stated that initially the facility without liquefaction equipment would be built and that the liquefaction equipment could be added at a future date. Southwest has stated that the useful life of either option is 21 years.

16. As outlined below, Staff reviewed all of the estimated costs of the facility under both options for reasonableness. During this review, Staff asked a number of questions for clarification of the facility costs included in the estimates, for all associated operational costs and for the revenue requirement for 10 years under both options, as well as questions related to how this facility will benefit Southwest customers.

17. Staff recommends that the Commission authorize pre-approval of a storage facility without liquefaction equipment using the Company's proposed accounting deferral proposal.

However, Staff's recommendation would be conditioned upon a number of stipulations, including the following: first, that there be cessation dates associated with the accounting deferral; second, that the total amount subject to deferral be capped, and third, that any potential cost savings also be deferred.

Location

18. Southwest originally evaluated six potential sites, later adding several additional sites, where it considered; (1) areas that experienced outages during the February 2011 supply disruption event, (2) portions of its distribution system capable of receiving significant volumes of gas, and (3) locations where the proposed LNG storage facility could connect to Southwest's distribution system with minimal additional pipeline facilities. The Company also considered the availability of utilities (water, power, etc.), land use zones, sensitive nearby facilities such as schools and hospitals, landowner and parcel information, rights-of-way and access roads, and available acreage. The six sites evaluated would be viable under both storage options.

19. Southwest states that it cannot provide a definitive opinion as to what the final land acquisition cost will be because it says that sellers are currently asking for three to three and a quarter times more than for what the sites were recently appraised. The Company speculates that because these sites are all zoned commercial/industrial the land owners may be factoring in an anticipated value of revenue they perceive can be realized from potential developments. The Company also noted that the appraisal reports were generated using information from a time of economic downturn. Southwest believes that the land owners' current asking prices may be formed by a more optimistic assessment of the value of their property that is reflective of an improving economy. As such, the Company intends to continue negotiations with multiple land owners, have its own independent appraisals conducted on these sites to further facilitate these negotiations, and endeavor to pursue the parcel that is estimated to yield the lowest overall project cost.

Construction costs

20. Actual construction costs of the LNG facility will also, be driven by which storage option is chosen. The Company stated that a facility built without liquefaction would be built such that the liquefaction equipment could be added at a later date.

21. Also impacted by the facility option chosen; are the allowance for funds used during construction ("AFUDC") and administrative and general overhead costs because these items are based on a percentage of the overall project cost. The Company is proposing inclusion of about 2.2 percent for AFUDCand 5.53 percent in administrative overheads. Such administrative overheads would not be applied to the cost of land, right-of-way and LNG gas expenses.

Operating costs

22. Southwest provided estimates that show how the operational costs under the various facility options will differ. The differences are primarily due to power and labor requirements, as well as price differences in the costs associated with refilling the storage tank with natural gas. As shown on Schedule BAB-4, attached to the Staff Report, under the with liquefaction option, Southwest estimates that it will cost $905,245 in the first year of operation and $807,728 in the second year. The Company estimates that under the option without liquefaction, it will cost $236,936 in the first year of operation and $240,490 in the second year. Under both options, the Company anticipates annual increases of about 1.5 percent in subsequent years.

23. As shown on line 2 of Schedule BAB-4 attached to the Staff Report, power costs associated with operating the facility with liquefaction equipment in the first year are estimated to be $256,556 more than a facility without liquefaction equipment. This includes the power costs only associated with liquefying natural gas to refill the tank as gas is released into the pipeline. Power costs are estimated to be higher in the first year of operation, as a result of the increased power requirements necessary to fill the LNG storage tank with liquefaction equipment. As a result in the second year of operation, power costs for a facility with liquefaction equipment are anticipated to decrease by $107,494, from $296,786 to $189,292.

24. Per the Company, operating a facility with liquefaction equipment would require six full-time employees four of which would be added positions. As shown on line 4 of Schedule BAB-4, attached to the Staff Report, the increased labor requirements are estimated to be $544,855. For a facility without liquefaction equipment, the engineering firm hired to assist the Company in evaluating this facility recommended that two onsite employees be present during any filling and vaporization periods, and estimates that 600 man hours would be necessary for annual maintenance. As a result,

the Company would likely need to hire one full-time position to meet the needs of a facility without liquefaction. As shown on line 4 of Schedule BAB-4, attached to the Staff Report, the increased labor requirements would cost an estimated $133,102 or $411,753 less than a facility with liquefaction.

25. Under the LNG storage facility without liquefaction, the Company would require a third party vendor to truck in liquid natural gas to fill the tank, while a facility with liquefaction equipment would connect directly to the El Paso pipeline and liquefy the gas directly. As shown on Schedule BAB-5 attached to the Staff Report, these two methods of filling the tank would result in different gas costs. In year 1, initial fill, the cost of a facility without liquefaction are estimated to be $5,267,537 while those for a facility with liquefaction equipment would be $2,188,144, a difference of $3,079,393. There are similar cost differences in year 2 under the boil off[2] and full cycle alternatives[3].

Revenue Requirement

26. The revenue requirement is impacted by the total cost of the facility and the associated operating costs under each option. As shown on Schedule BAB-5, attached to the Staff Report, due primarily to the $23.3 million cost of the liquefaction equipment as covered in the construction cost section, the revenue requirement for an LNG facility with liquefaction for the first year is estimated to be $6,475,758 higher than an LNG facility without liquefaction. The fair value rate of return that the Company is applying in determining the anticipated rate of return on the proposed LNG facility was approved in Decision No. 72723 at 7.02 percent, which Southwest is stating equals a pre-tax rate of return of 12.22 percent[4].

Similar Facilities

27. To assist in evaluating the reasonableness of the Company's cost estimates in this filing, Staff asked the Company to identify any similar LNG facilities in other states that have been constructed recently. The Company directed Staff to a project in New Mexico. The project was proposed by the New Mexico Gas Company in 2012 but was ultimately withdrawn from consideration

---

[2] Boil off occurs during a heat transfer process that causes the LNG stored in the tank to vaporize after the LNG reaches a temperature greater than minus 260 degree Fahrenheit. Any boil off would be released into the distribution system.

[3] A full cycle is where all of the available LNG gas is released into the distribution system and the tank is subsequently refilled. The Company stated in response to DR BG1.30 that 11,000 Dth would be held back as heel or cushion gas to maintain the tank.

[4] Staff did not verify the Company's grossed-up calculation that was provided in response to DR BG2.07.

and never built. Staff compared the cost of the LNG facility without liquefaction to the costs of the proposed New Mexico facility, which the Company stated was for a similar facility[5].

28. The New Mexico facility was estimated to cost $38.1 million, which is $8.2 million less than the Southwest proposed facility without liquefaction.

Cost Recovery

29. After evaluating both options, the Company is proposing a facility without liquefaction equipment. Southwest is requesting an accounting deferral for the estimated cost of the LNG facility without liquefaction plus 20 percent for contingencies for a total cost of up to $55 million. Other options include approving the prudence of the project but not authorizing an accounting deferral and allowing recovery through the normal rate base/rate of return considerations in the Company's next rate case, or establishing a storage surcharge. Staff recommends that the Commission approve an accounting deferral for the Company's estimated cost of $46 million removing the proposed AFUDC, and then providing approximately 10 percent for contingencies on the remaining amount for a total cost not to exceed $50 million. As shown on Schedule BAB-7, attached to the Staff Report, for an LNG facility without liquefaction equipment, the typical residential monthly bill would increase overall from $40.32 to $40.94, an increase of $0.62, or 1.54 percent[6].

30. Staff is making no recommendation at this time regarding the ultimate recovery of the deferred costs. Staff's initial position in a future rate review where recovery of the deferrals is considered is that the cost deferrals not be included in rate base. However, that will need to be a matter based upon a showing of prudence and other evidence to be given consideration in that future Southwest rate case. Staff further recommends that gas costs associated with the LNG storage facility be recovered through Southwest's existing Purchased Gas Adjustor mechanism. Staff further recommends that Southwest identify specific gas costs related to the LNG facility in the monthly PGA reports it files with the Commission.

...

[5] The costs included in Confidential Schedule BAB-6 were reported in exhibit KLO-3 of the New Mexico Gas Company, Inc. filing, case number 12-00364-UT. Staff reclassified the New Mexico Gas Company reported expenses into the categories used by Southwest Gas, for comparative purposes.

[6] The typical bill impact uses the annualized costs, to account for seasonal price fluctuations in the price of natural gas. The winter and summer typical bill impacts can be seen on Schedule BAB-7.

Safety Considerations Related to the Proposed Facility

31. In the matter of Southwest's proposal to construction an LNG storage facility in the Tucson area, the Pipeline Safety Section has reviewed the Southwest's proposal to determine if the initial design was conducted in accordance with Title 49, Code of Federal Regulations ("CFR") Part 193. These regulations govern the design, construction, operation, and maintenance of LNG facilities. The Safety Section has had experience in this issue due to fact that there are two (2) jurisdictional LNG plants in operation subject to federal and state regulations. These LNG facilities are located in Ehrenberg and Topock.

32. Prior to the construction of any new LNG facility, 49 CFR Part 193 requires a siting study and calculation as part of the initial design phase. This study involves the determination of exclusion distances as a result of thermal energy in the form of heat resulting from an LNG fire, and exclusion distances determined as a result of flammable vapors from an LNG spill. The calculated distances are used to design the plant to minimize hazards to public safety and property that could possibly result from an LNG fire or LNG spill.

33. Based on information provided by Southwest, it appears that the siting requirement for protection from thermal radiation resulting from an LNG fire was initially completed. When conducting the study, there were situations based on local weather conditions that were required to be considered in accordance with Part 193 and National Fire Protection Association ("NFPA") 59A, that include the following:

(1)Local wind speed that would produce the maximum thermal radiation distance. In this model, the calculations used a wind speed of 35 mph. It was assumed that wind speeds higher that 35 mph would occur less than 5 percent of the time based on recorded weather information for the South Tucson area. (2)Local temperature and humidity that would also produce the maximum thermal radiation distance. The calculations used a temperature of 120 degrees and a humidity level of 5 percent.

34. Southwest will still need to conduct a siting study to determine exclusion zones (safe distances) for dispersion of flammable vapors. 49 CFR Part 193 and NFPA 59A requires distances of vapor as determined by the following conditions:

(1)Average gas concentration in air is 2.5 percent. (2)Weather conditions that would produce the maximum downwind distances of vapors from an LNG spill. (3)Other conditions such as elevation contour and surface roughness (density of vegetation, surface terrain, etc.) must also be considered in accordance with Part 193 and NFPA 59A.

35. Staff recommends that Southwest complete the siting requirements for flammable vapor dispersion as a condition of approval for its proposed LNG facility.

Conclusions

36. Southwest's application involves the construction of an LNG facility and contemplates the option of constructing a liquefaction facility also. Southwest has indicated that the liquefaction facility could be added at a later date without significant cost differences other than materials, etc. may be more expensive due to inflation in the future.

37. Staff likes the idea that natural gas could be added from the nearby interstate pipeline system rather than trucked in from a distant location. However, from the information provided by Southwest, it does not appear that the cost of the liquefaction facilities at this time would provide commensurate benefits to Southwest and its ratepayers. Thus, Staff recommends against pre-approval of the liquefaction option, recognizing that construction of liquefaction may be revisited by the Company at a future date.

38. Regarding the storage facility itself, Staff believes that there is a growing need in Arizona for natural gas storage to maintain reliable natural gas service to Arizona residents. This need would be greatly exacerbated under the proposed 111(d) rules proposed by the Environmental Protection Agency ("EPA"). Under the EPA rules as currently drafted and absent significant modification, Arizona would have to shut down most if not all of its fleet of coal generating units to try to meet EPA's 2020 interim goal. This would greatly increase Arizona's reliance on natural gas for electric generation and would likely increase interest in the development of a large scale salt cavern natural gas storage facility in the near future.

39. Southwest has previously been part of efforts to develop salt cavern natural gas storage in Arizona. If salt cavern natural gas storage were developed in Arizona, it would be expected to

provide a lower cost storage alternative for a given volume of capacity than Southwest's proposed LNG storage facility would.

40. Thus a question arises as to whether Southwest should pursue a more certain, more costly LNG storage facility in the short term or wait and be part of a less costly, less certain salt cavern storage facility in the future. There are arguments to be made for both alternatives. If there was some certainty that a salt cavern facility was to be built, Staff believes that would be the preferred course of action, but such certainty is elusive at this time. Thus, it is a judgment call as to whether Southwest should build now or wait on a possible salt cavern facility. At this time Staff recommends pre-approval of the LNG facility, without liquefaction, given the uncertainty around construction of a salt cavern facility.

Summary of Staff Recommendations

41. Staff recommends approval of the LNG storage facility without liquefaction under the accounting deferral requested by the Company with the following stipulations:

A. Any authorizations to defer costs shall expire no later than November 1, 2017. Any expense incurred after October 31, 2017 would not be eligible for deferral.

B. Any authorizations to defer costs shall be limited to $50 million.

C. Any potential costs savings, here as yet unquantified by the Company or Staff shall also be deferred.

D. The deferred costs and deferred benefits shall be evaluated in a future rate proceeding.

E. The Company file, as a compliance item with Docket Control, construction progress reports every 6 months until completion, starting 12 months after the issuance of the Decision in this proceeding until project completion. These reports should include all invoiced, project costs incurred as of the date of the report.

F. The Company complete the siting requirements for flammable vapor dispersion as a condition of approval for its proposed LNG facility.

...

G. Any gas costs associated with the LNG storage facility be recovered through Southwest's existing Purchased Gas Adjustor mechanism.

H. The Company identify specific gas costs related to the LNG facility in its monthly PGA reports it files with the Commission.

CONCLUSIONS OF LAW

1. Southwest Gas Corporation is an Arizona public service corporation within the meaning of Article XV, Section 2, of the Arizona Constitution.

2. The Commission has jurisdiction over Southwest Gas Corporation and over the subject matter of the application.

3. The Commission, having reviewed the filing and Staff's Memorandum dated December 5, 2014, concludes that it is in the public interest to approve Southwest Gas Corporation's application for pre-approval to construct the LNG facility, subject to the conditions discussed herein.

ORDER

IT IS THEREFORE ORDERED that Southwest Gas Corporation application for approval of an LNG storage facility without liquefaction under the accounting deferral requested by the Southwest Gas Corporation be and hereby is approved as discussed herein.

IT IS FURTHER ORDERED that any authorizations to defer costs shall expire no later than November 1, 2017 and any expense incurred after October 31, 2017 shall not be eligible for deferral.

IT IS FURTHER ORDERED that any authorizations to defer costs shall be limited to $50 million.

IT IS FURTHER ORDERED that any potential costs savings, here as yet unquantified by the Southwest Gas Corporation or Staff shall also be deferred.

IT IS FURTHER ORDERED that the deferred costs and deferred benefits shall be evaluated in a future rate proceeding.

IT IS FURTHER ORDERED that the Southwest Gas Corporation file as a compliance item with Docket Control, construction progress reports every 6 months until completion, starting 12 months after the issuance of the Decision in this proceeding until project completion. These reports shall include all invoiced, project costs incurred as of the date of the report.

IT IS FURTHER ORDERED that the Southwest Gas Corporation complete the siting requirements for flammable vapor dispersion as a condition of approval for the proposed LNG facility.

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

...

IT IS FURTHER ORDERED that any gas costs associated with the LNG storage facility be recovered through Southwest Gas Corporation existing Purchased Gas Adjustor mechanism.

IT IS FURTHER ORDERED that the Southwest Gas Corporation identify specific gas costs related to the LNG facility in its monthly PGA reports it files with the Commission.

IT IS FURTHER ORDERED that this decision shall become effective immediately.

BY THE ORDER OF THE ARIZONA CORPORATION COMMISSION

CHAIRMAN COMMISSIONER

COMMISSIONER COMMISSIONER COMMISSIONER

IN WITNESS WHEREOF, I, JODI JERICH, Executive Director of the Arizona Corporation Commission, have hereunto, set my hand and caused the official seal of this Commission to be affixed at the Capitol, in the City of Phoenix, this _____day of _____, 2014.

_____
JODI JERICH
EXECUTIVE DIRECTOR

DISSENT: _____

DISSENT: _____

SMO:BGG:sms\CHH

SERVICE LIST FOR: Southwest Gas Corporation
DOCKET NO. G-01551A-14-0024

Mr. Steven M. Olea
Director, Utilities Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Ms. Janice M. Alward
Chief Counsel, Legal Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Debra Gallo
5241 Spring Mountain Road
P.O. Box 98510
Las Vegas, Nevada 89193-8510